

REMARKS

The present Office Action rejected claims 1, 2, 5, 7, and 9-13 as being anticipated by Berube (U.S. Patent No. 6,287,302), and treated claims 3 and 4 as withdrawn based on their being directed to a non-elected specie. Applicant respectfully requests reconsideration of the rejection, and the withdrawal of claims 3 and 4, based on the following distinctions between Berube and applicant's pending claims.

Berube does not disclose the radiation reflector at the interface between two of the sections of the dielectric body as defined in claim 1. The device of Berube is a waveguide with a horn 16 at the end. There is no structure which can be considered to be a radiation reflector provided at the interface between two sections of a dielectric body so as to modulate the transmission of radiation and tune the applicator.

Applicant respectfully submits the following further explanation, in order to facilitate appreciating the differences between applicant's claimed invention and Berube and the advantages of applicant's claimed arrangement from the devices 42 in the Berube document. A significant difference between Berube and applicant's claimed radiation applicator is that in Berube the electromagnetic field before the reflector 37 in Fig. 4 is confined within a guiding structure i.e. the horn. The reflector 37 is simply a layer of some material which has a permittivity somewhere between air and that of the tissue. The thickness of the layer 37 will be about a quarter wavelength. This is effectively a form of impedance matching which is absolutely standard in microwave engineering. If the permittivity of the body tissue being treated changes, as it dries out for example, the matching layer 37 will no longer be of the correct characteristics to achieve a match and increased reflection will occur.

The applicator of the present invention, on the other hand, isn't a waveguide. To be an effective antenna the length of a monopole needs to be about half a wavelength in the medium into which it is matching. When the tissue is wet the permittivity is high so the wavelength is short and correspondingly our antenna is short, corresponding to the proximal section 3 of the dielectric body before the first reflector 10. As the tissue dries, out the permittivity drops and a larger fraction of the input power is confined to the applicator which then starts to act more like a waveguide. Hence a greater amount of power goes past the first reflector 10 and enters the distal section 4. Hence the effective length of the antenna increases, thereby matching better to the longer wavelength in the dried out tissue. Hence, unlike Berube, the match is retained for a greater range of tissue variation.

In summary, the present invention functions to retain the match as the tissue dries out by actively changing its effective length. The Berube device does not have this function since it can only match to tissue with a particular permittivity, presumably that of wet tissue.

In view of the foregoing, applicant respectfully submits that independent claim 1 is allowable over Berube. In view of independent claim 1 being patentably distinct from Berube, dependent claims 2, 5, 7, and 9-13, as well as (withdrawn) dependent claims 3 and 4, are also patentably distinct from Berube. Accordingly, applicant requests the issuance of a timely Notice of Allowance for claims 1-5, 7 and 9-13.

The Commissioner is authorized to charge any fees or deficiencies or credit any overpayments to Eugene M. Cummings, P.C., Deposit Account No. 50-4199 with reference to attorney docket number (0934-0046).

Respectfully submitted,

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